



MATRIX FEEDER

## **Service Manual – Automatic Feeder Matrix AF / AFS**

English Version

FRAMA AG CH-3438 LAUPERSWIL / BERN		TITLE: SERVICE MANUAL SUBJECT: AUTOMATIC FEEDER MATRIX AF / AFS AUTHOR(S): ROLAND BÄRTSCHI (BAER) FILE: PER_MAN_R0102_EN_SERVICE MANUAL AF_AFS.DOC	
DOC. REF: DOC. R01.02		CREATED: 31.10.13 16:10 MODIFIED: 19.11.13 13:11	PAGE 2 OF 40

# Service Manual

---

## Automatic Feeder Matrix AF / AFS

**R01.02**

**31.10.2013**

**AUTHOR(S): Roland Bärtschi (baer)**

**---For internal use only---**

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN		TITLE: SUBJECT: AUTHOR(S): FILE:	SERVICE MANUAL AUTOMATIC FEEDER MATRIX AF / AFS ROLAND BÄRTSCHI (BAER) PER_MAN_R0102_EN_SERVICE MANUAL AF_AFS.DOC
DOC. REF:		CREATED:	31.10.13 16:10
DOC.	<b>R01.02</b>	MODIFIED:	19.11.13 13:11
			PAGE 3 OF 40

## Document Overview

The following table shows in a short form the Intention of this document. There all instances (target readers) mentioned where this document is intended for. The point restrictions shows which points or themes are not treated in this document. Any points or themes with reference to other documents are mentioned under the point references.

Document Overview	
Document Content/Goal:	Service Manual
Intended for:	Technical staff, trained on the Frama AG Matrix MOL and TOL franking system.
Restrictions:	
References:	

## Document History

The following table records all changes that were made in this document. In case of little changes (e.g. format, spelling, minor corrections or omissions) the version number after the [.] has to be incremented. For important changes (e.g. content) the version number before the [.] has to be increased.

Date	Version	Action	Authors
11.08.2011	D01.00	Creation	baer
08.12.2011	R01.00	Release	baer
26.03.2013	R01.01	Tool list (10.3.2) with thickness gauge completed	baer
19.11.2013	R01.02	New tool 1019410 for separator lever adjustment added. Setting value changed to 0.2mm (Chapter 10.3.1)	baer

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN		TITLE: <b>SERVICE MANUAL</b> SUBJECT: <b>AUTOMATIC FEEDER MATRIX AF / AFS</b> AUTHOR(S): <b>ROLAND BÄRTSCHI (BAER)</b> FILE: <b>PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC</b>
DOC. REF:		CREATED: <b>31.10.13 16:10</b>
DOC. <b>R01.02</b>		MODIFIED: <b>19.11.13 13:11</b>
		<b>PAGE 4 OF 40</b>

## LIST OF CONTENT

---

FRAMA AG CH-3438 LAUPERSWIL / BERN		TITLE: SERVICE MANUAL SUBJECT: AUTOMATIC FEEDER MATRIX AF / AFS AUTHOR(S): ROLAND BÄRTSCHI (BAER) FILE: PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC	
DOC. REF: DOC. R01.02		CREATED: 31.10.13 16:10 MODIFIED: 19.11.13 13:11	PAGE 5 OF 40

<b>1. INTRODUCTION .....</b>	<b>8</b>
<b>1. INTRODUCTION .....</b>	<b>8</b>
<b>2. SECURITY NOTES .....</b>	<b>9</b>
<b>3. AUTOMATIC FEEDER SPECIFICATION .....</b>	<b>10</b>
<b>4. AUTOMATIC FEEDER MATRIX AF AND AFS .....</b>	<b>11</b>
4.1. Parts designation .....	11
4.1.1. Table Right TR and Table Left TL .....	13
<b>5. ELECTRONICS .....</b>	<b>14</b>
<b>6. LIGHT BARRIER DIAGNOSTIC TEST .....</b>	<b>15</b>
6.1. Test Feeder Matrix AF / AFS .....	15
6.2. Position of Light Barriers in Feeder Matrix AF / AFS .....	16
<b>7. SOFTWARE UPDATE .....</b>	<b>16</b>
<b>8. DISASSEMBLING FEEDER MATRIX AF / AFS .....</b>	<b>17</b>
8.1. Upper Mechanics .....	19
8.1.1. Disassembling Clutch of Separator Roller .....	21
8.2. Lower mechanics .....	22
8.3. Removing the Main Board .....	23
8.4. Exchange of the grey intake rollers .....	23
8.5. Exchange of the red intake rollers .....	24
8.6. Exchange of the transport rollers .....	25
8.7. Exchange of the motor for the red intake rollers .....	25
8.8. Exchange of the motor for the stack rollers .....	26
8.9. Exchange of the motor for the transport rollers .....	27
<b>9. ASSEMBLING FEEDER MATRIX AF / AFS .....</b>	<b>28</b>
9.1. Lower mechanics .....	28
9.2. Upper mechanics .....	29
9.3. Assembling upper & lower mechanics .....	31
<b>10. ADJUSTMENTS .....</b>	<b>32</b>
10.1. Separation roller .....	32
10.2. Belts .....	33
10.2.1. Belt – Transport Rollers .....	33
10.2.2. Belt – Stack Rollers .....	33
10.2.3. Belt – Motor transmission .....	34
10.2.4. Belt – Manual Control for correct belt tension .....	34
10.3. Adjustment of Separator Levers .....	35
10.3.1. Adjustment of lever retarded motion .....	36
10.3.2. Tool list .....	36
<b>11. MAINTENANCE INSTRUCTION .....</b>	<b>37</b>
11.1. General measures .....	37
11.2. Cleaning of the Rubber Rollers .....	37
11.3. Lubrication chart .....	37
11.4. General information about the lubrication method .....	38
11.5. Lubrication for after sales service .....	38
11.6. Bearing and lever joints .....	38
<b>12. NOTES – MATRIX FEEDER AF / AFS .....</b>	<b>39</b>

## LIST OF PICTURE

---

Figure 1 - Matrix F8 with Feeder AFS, Extension Table TR / TL.....	9
Figure 1 - Matrix F8 with Feeder AFS, Extension Table TR / TL.....	9
Figure 2: Parts Designation .....	12
Figure 3: Parts Designation .....	12
Figure 4: Parts Designation .....	12
Figure 5: Parts Designation .....	13
Figure 6: Parts Designation .....	13
Figure 7: Parts Designation .....	13
Figure 8: Parts Designation .....	14
Figure 9: Parts Designation .....	14
Figure 10: Main Board AF and AFS .....	15
Figure 11: Connector board AF and AFS .....	15
Figure 12: Service Diagnostic .....	16
Figure 13: Service Diagnostic .....	17
Figure 14: Separation Matrix – Feeder.....	18
Figure 15: Removing – Sealer Unit .....	18
Figure 16: Disassembling – Top Cover.....	18
Figure 17: Disassembling - Upper Mechanics .....	19
Figure 18: Disassembling – Upper Mechanics .....	19
Figure 19: Disassembling - Upper Mechanics .....	19
Figure 20: Disassembling - Upper Mechanics .....	20
Figure 21: Disassembling – Upper Mechanics .....	20
Figure 22: Disassembling - Upper Mechanics .....	20
Figure 23: Disassembling - Label Dispenser .....	21
Figure 24: Disassembling - Label Dispenser .....	21
Figure 25: Disassembling – Clutch Separator.....	22
Figure 26: Disassembling – Clutch Separator.....	22
Figure 27: Disassembling - Lower Mechanics .....	23
Figure 28: Disassembling – Lower Mechanics .....	23
Figure 29: Disassembling - Lower Mechanics .....	23
Figure 30: Disassembling - Main PCB .....	24
Figure 31: Disassembling – Gray Intake Rollers .....	24
Figure 32: Disassembling - Gray Intake Rollers .....	24
Figure 33: Disassembling - Red Intake Rollers .....	25
Figure 34: Disassembling - Red Intake Rollers .....	25
Figure 35: Disassembling - Red Intake Rollers .....	25
Figure 36: Disassembling - Transport Rollers .....	26
Figure 37: Disassembling - Transport Rollers .....	26
Figure 38: Disassembling - Motor Replacement.....	26
Figure 39: Disassembling - Motor Replacement.....	27
Figure 40: Disassembling - Motor Replacement.....	27
Figure 41: Disassembling - Motor Replacement.....	27
Figure 42: Disassembling - Motor Replacement.....	28
Figure 43: Disassembling - Motor Replacement.....	28
Figure 44: Disassembling - Motor Replacement.....	28
Figure 45: Assembling - Lower Mechanics .....	29
Figure 46: Assembling - Lower Mechanics .....	29
Figure 47: Assembling - Lower Mechanics .....	29
Figure 48: Assembling - Label Dispenser .....	30
Figure 49: Assembling - Label Dispenser .....	30
Figure 50: Assembling - Upper Mechanics .....	30
Figure 51: Assembling - Upper Mechanics .....	31
Figure 52: Assembling - Upper Mechanics .....	31
Figure 53: Assembling – Upper & Lower Mechanics .....	31
Figure 54: Assembling - Upper & Lower Mechanics.....	32
Figure 55: Assembling – Upper & Lower Mechanics .....	32
Figure 56: Assembling - Top Cover .....	32
Figure 57: Adjustments - Separation Roller .....	33
Figure 58: Adjustments – Separation Roller .....	33
Figure 59: Adjustments - Separation Roller .....	33
Figure 60: Adjustments - Belt.....	34
Figure 61: Adjustments - Belt.....	34
Figure 62: Adjustments - Belt.....	35
Figure 63: Adjustments - Belt.....	35
Figure 64: Adjustments – Separator Lever .....	36
Figure 65: Adjustments – Separator Lever .....	36



Figure 66: Adjustments – Separator Lever ..... 36

Figure 67: Adjustments - Belt..... 37

## 1. Introduction

This document, provided by Frama AG, contains general technical information of the automatic Feeder Matrix AF and AFS. Furthermore it includes a detailed description for the disassembling and assembling procedure.

This document is mainly designed for technical staff and is based on the technical training performed by Frama AG.

- Subject to change without notice.

### Related documents:

Spare parts manual:	Version R03.00 and update R04.00
Operating guide:	Frama Matrix F8



**Figure 1 - Matrix F82 with Feeder AFS, Extension Table TR / TL  
and Conveyer Stacker CF**

FRAMA AG CH-3438 LAUPERSWIL / BERN		TITLE: SERVICE MANUAL SUBJECT: AUTOMATIC FEEDER MATRIX AF / AFS AUTHOR(S): ROLAND BÄRTSCHI (BAER) FILE: PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC	
DOC. REF: DOC	R01 02	CREATED: 31.10.13 16:10 MODIFIED: 19.11.13 13:11	PAGE 10 OF 40

## 2. Security Notes



- The franking system must be turned off before removing or replacing any periphery devices!



- By open machine avoid touch moving parts while the system is in operation!



- Observe precautions for handling electrostatic sensitive parts!

FRAMA AG CH-3438 LAUPERSWIL / BERN		TITLE: SERVICE MANUAL SUBJECT: AUTOMATIC FEEDER MATRIX AF / AFS AUTHOR(S): ROLAND BÄRTSCHI (BAER) FILE: PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC	
DOC. REF: DOC. R01.02	CREATED: 31.10.13 16:10 MODIFIED: 19.11.13 13:11	PAGE 11 OF 40	

### 3. Automatic Feeder Specification

Franking per hour: 8500 letters / h (C6)  
 Maximum envelop thickness: 10 mm  
 Operating Noise: 53.8 dBA (Matrix TOL and Feeder AFS)

#### Dimensions

Dimensions AFS: 515 x 217 x 205 mm  
 Wight: 9,0kg

#### Power consumption

Matrix F8 / AFS: Standby 12,6Watt  
 In Operation: 54Watt

#### Nominal data power supply

Automatic feeder AFS: 90-264V AC, 47-62Hz, 0,75A, T2A fused

#### Matrix Feeder Types:

AF Matrix Feeder without envelope seal function  
 AFS Matrix Feeder with envelope seal (S) function

FRAMA AG CH-3438 LAUPERSWIL / BERN		TITLE: SERVICE MANUAL SUBJECT: AUTOMATIC FEEDER MATRIX AF / AFS AUTHOR(S): ROLAND BÄRTSCHI (BAER) FILE: PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC	
DOC. REF: DOC. R01.02		CREATED: 31.10.13 16:10 MODIFIED: 19.11.13 13:11	PAGE 12 OF 40

## 4. Automatic Feeder Matrix AF and AFS

This section provides a general overview of the Feeder Matrix AF / AFS. It comprises a description for disassembling / assembling and adjustments as well as recommendations for maintenance.

### 4.1. Parts designation

1. Side stop
2. Letter separation roller
3. Letter stack roller
4. Letter vibrator roller
5. Water tank
6. Label dispenser device
7. Docking mechanism extension table (5x) TR and TL

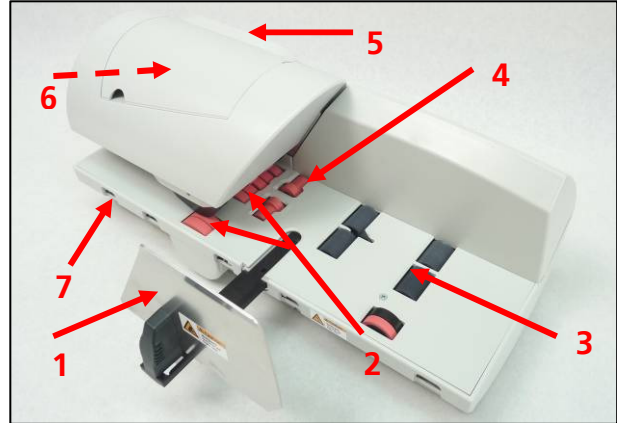


Figure 2: Parts Designation

1. Letter separator roller
2. Additional separator roller for big size letter
3. Label dispenser unit
4. Additional separator lever for big sized enveloped

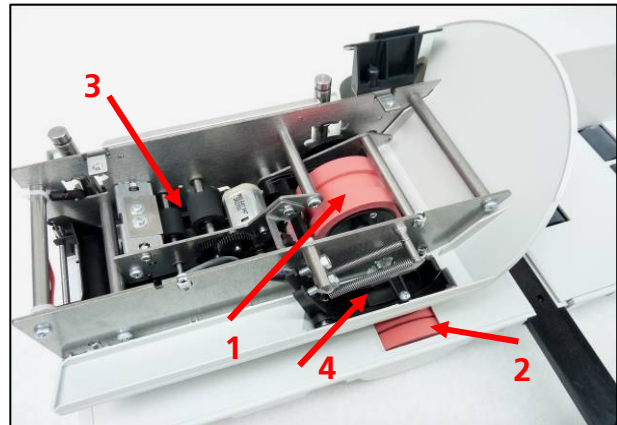


Figure 3: Parts Designation

1. Separator roller
2. Clutch

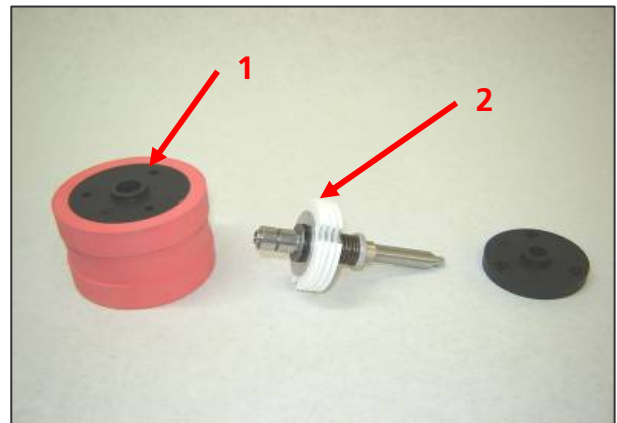


Figure 4: Parts Designation

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN	TITLE: SERVICE MANUAL SUBJECT: AUTOMATIC FEEDER MATRIX AF / AFS AUTHOR(S): ROLAND BÄRTSCHI (BAER) FILE: PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC	
DOC. REF: R01.02 DOC.	CREATED: 31.10.13 16:10 MODIFIED: 19.11.13 13:11	PAGE 13 OF 40

1. Motor 1 → Transport-rollers
2. Motor 2 → Intake-rollers (red)
3. Motor 3 → Stack drive-rollers (grey)
4. Light barrier motor start and short letter control
5. Letter release lever
6. Main board feeder

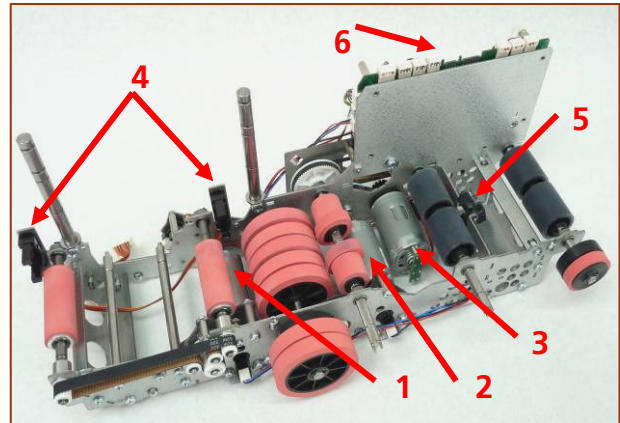


Figure 5: Parts Designation

1. Connector board.  
Power and Data supply for Matrix system
2. Power supply
3. Main power socket with fuse

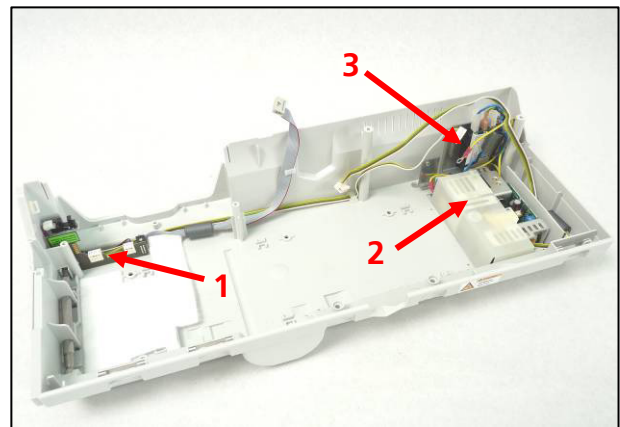


Figure 6: Parts Designation

1. Fissile wedge.
2. Seal unit

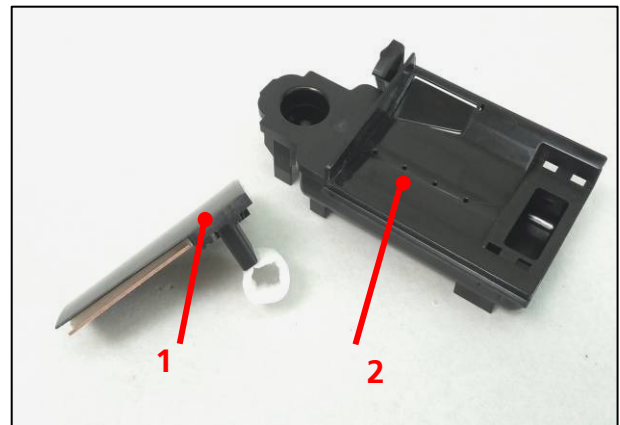


Figure 7: Parts Designation

#### 4.1.1. Table Right TR and Table Left TL

Table TR

- Only available for matrix F8 system

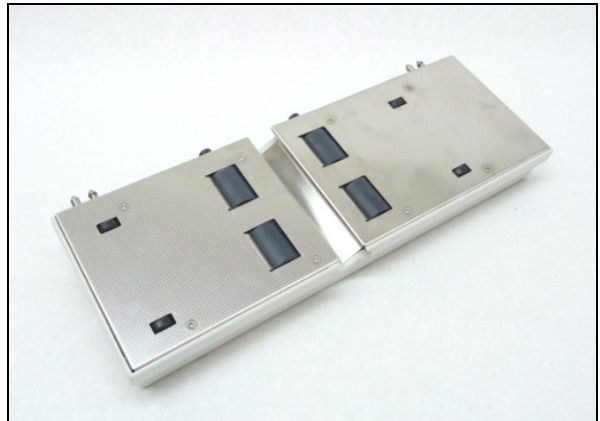


Figure 8: Parts Designation

Table TL

- Only available for Matrix F8 system

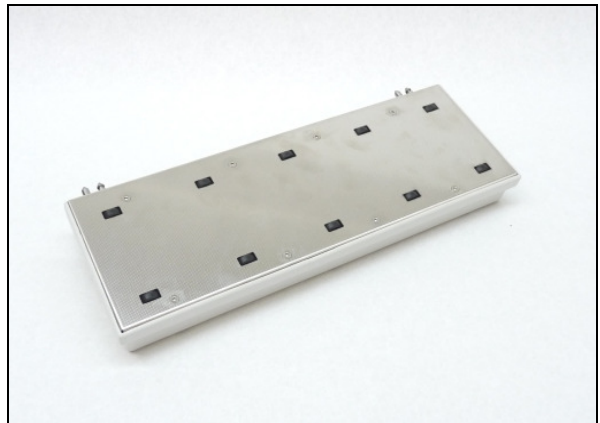


Figure 9: Parts Designation

## 5. Electronics

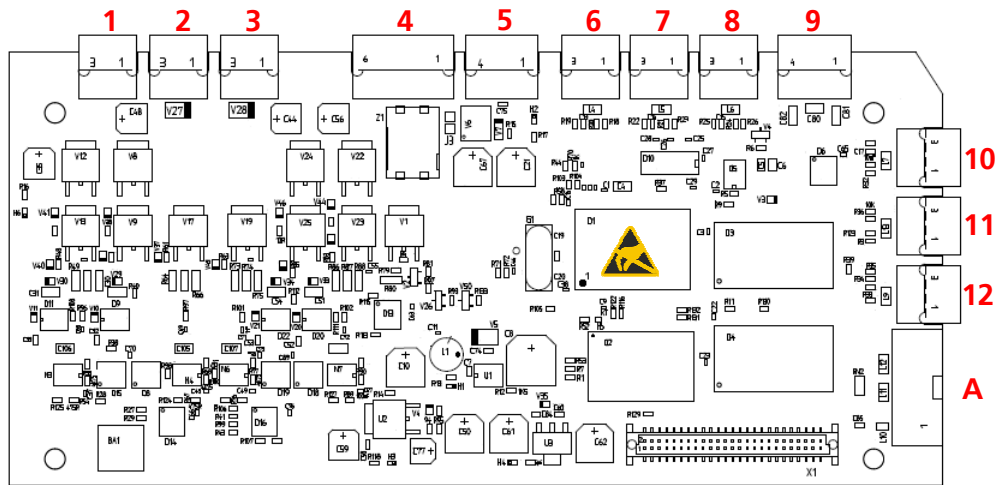


Figure 10: Main Board AF and AFS

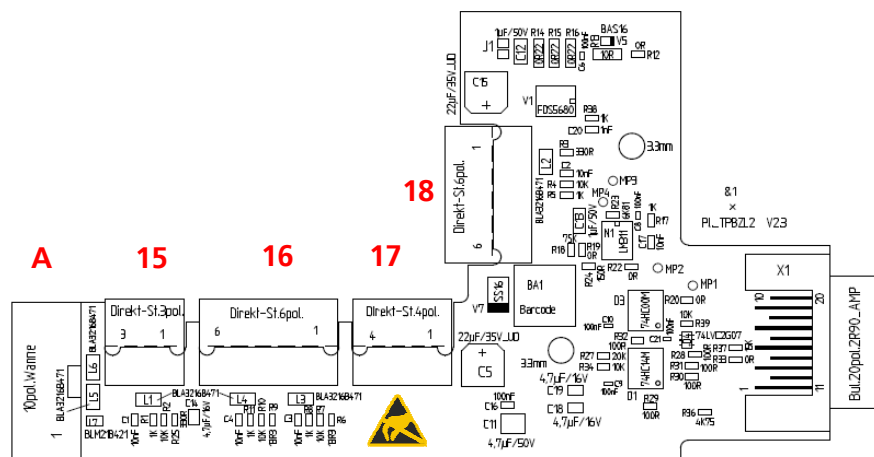


Figure 11: Connector board AF and AFS

No.	Description	No.	Description
1	Motor – Intake-rollers (red)	11	Water - level sensor
2	Motor – Intake-rollers (grey)	12	Sensor – Solenoid sealer
3	Motor – Transport-rollers	15	Water-tank sensor
4	Power supply	16	Light barrier BA1 and BA2
5	Connector board	17	Main board
6	Light barrier – Motor intake-rollers (red)	18	Label dispenser motor and light barrier
7	Light barrier – Motor transport	A	Data cable (grey)
8	Light barrier – Motor intake-rollers (grey)		
9	Solenoid sealer		
10	Light barrier – Release lever		

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN	TITLE: SUBJECT: AUTHOR(S): FILE:	<b>SERVICE MANUAL</b> <b>AUTOMATIC FEEDER MATRIX AF / AFS</b> <b>ROLAND BÄRTSCHI (BAER)</b> <b>PER_MAN_R0102_EN_SERVICE MANUAL AF_AFS.DOC</b>	CREATED: 31.10.13 16:10 MODIFIED: 19.11.13 13:11 PAGE 16 OF 40
DOC. REF: DOC. R01.02			



## 6. Light barrier diagnostic test

During the start up procedure a check of all light barriers will be automatically performed. In case of an occurring malfunction an error code will be displayed. It is possible to display the status of each light barrier to facilitate the error searching. Therefore, press the service button as soon an error is displayed. As an example, the following display should be displayed:

### 6.1. Test Feeder Matrix AF / AFS

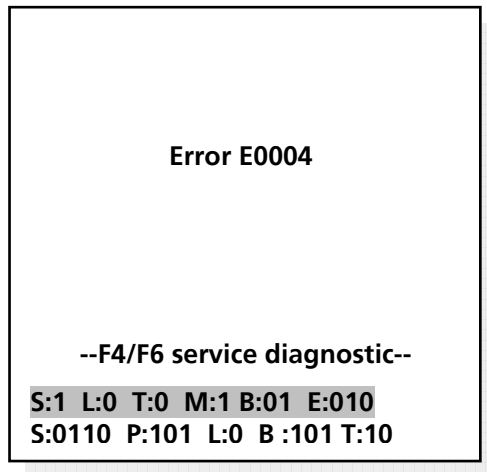


Figure 12: Service Diagnostic

#### S: Light barrier stack release switch

- 1 = Light barrier active
- 0 = Light barrier inactive

#### L: Sensor water level

- 0 = Light barrier active (tank empty)
- 1 = Light barrier inactive (tank full)

#### T: Light barrier water tank

- 0 = Light barrier active (tank inserted)
- 1 = Light barrier inactive (tank removed)

#### M: Sensor solenoid

- 0 = Light barrier active (magnet falling off)
- 1 = Light barrier inactive (magnet attracted)

#### B: Light barriers

- Position: Letter table BA2
  - 1 = Light barrier active
  - 0 = Light barrier inactive
- 2. Position: Letter table BA1
  - 1 = Light barrier active
  - 0 = Light barrier inactive

#### E: Light barrier motor transmitters

- 1. Transmitter motor transport
  - 0 = Light barrier active
  - 1 = Light barrier inactive
- 2. Transmitter motor separation
  - 0 = Light barrier active
  - 1 = Light barrier inactive
- 3. Transmitter motor intake
  - 0 = Light barrier active
  - 1 = Light barrier inactive

## 6.2. Position of Light Barriers in Feeder Matrix AF / AFS

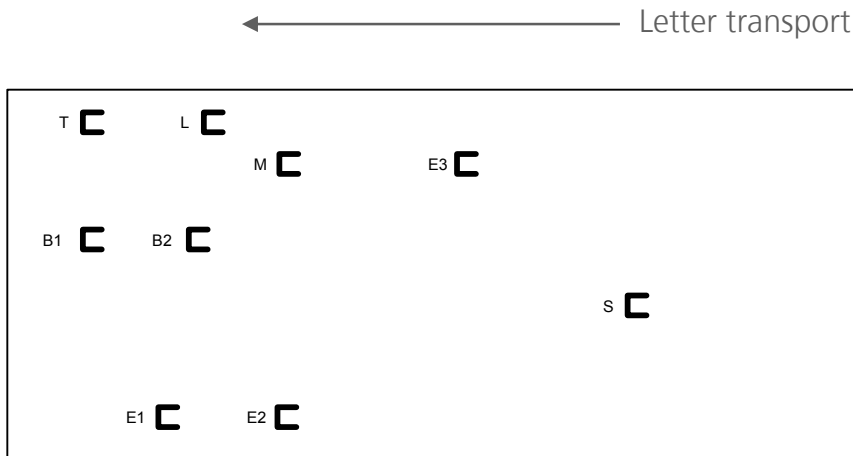


Figure 13: Service Diagnostic

## 7. Software update

In case of a necessary software update on the AF and AFS feeder follow the instructions below:

- Switch off the franking system.
- Plug in the corresponding software box or USB memory stick to the Matrix F6 or F8.
- Switch on the franking system. The machine detects a connected software box and checks the content of the box. Afterwards, the machine starts to copy the box content and overwrites the existing software version. This process takes approximately 4 minutes and can be followed by the percentage bar.



**Do not switch off the machine during the loading process!!! A power interruption would cause a damage of the memories on the feeder main PCB.**

- After the successful loading of the new software switch off the machine and remove the loading box.
- At the restart of the machine the new software version should be shown in the display during the start up procedure.

**Note:**




For some countries the software down load can be processed online (modem). The operator needs to carry out an inspection load and in the situation a new feeder software version is available the Matrix System starts the download automatically.

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN	TITLE: <b>SERVICE MANUAL</b> SUBJECT: <b>AUTOMATIC FEEDER MATRIX AF / AFS</b> AUTHOR(S): <b>ROLAND BÄRTSCHI (BAER)</b> FILE: <b>PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC</b>		
DOC. REF: DOC. <b>R01.02</b>	CREATED: <b>31.10.13 16:10</b> MODIFIED: <b>19.11.13 13:11</b>	PAGE <b>18</b> OF <b>40</b>	

## 8. Disassembling Feeder Matrix AF / AFS

The section comprises a description of the disassembling procedure of the Feeder Matrix AF / AFS.

- Turn off the device, disconnect the cord from the rear of the periphery device and separate the feeder as described in the operating guide.

**Note:**  
 Never separate franking machine and automatic feeder if they are switched on!

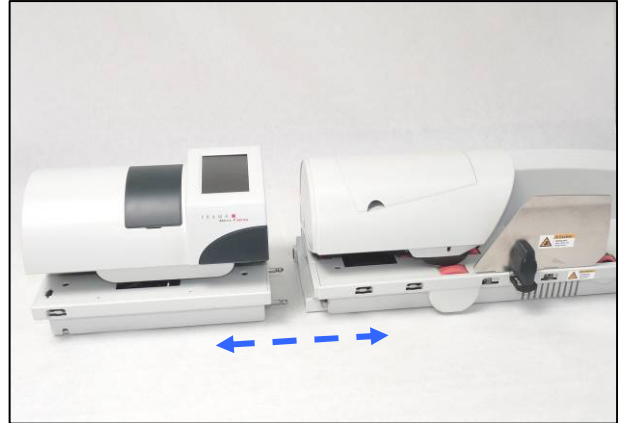


Figure 14: Separation Matrix – Feeder

- Remove the water tank on the back side.
- Remove the seal unit.



Figure 15: Removing – Sealer Unit

- Unscrew and remove the four screws underneath the flap and remove the whole cover.



Figure 16: Disassembling – Top Cover

- Unscrew the three screws (1) which are fixing the cover (2) and remove it.
- Unhook the water level detection sensor board which is snapped inside the cover (2).

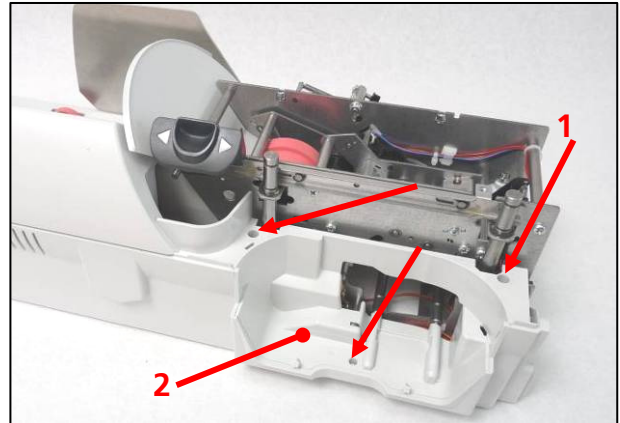


Figure 17: Disassembling - Upper Mechanics

- Disconnect cable 18 (1) from the connector board.
- Remove the two clips (2).
- Move the locking lever (3) and lift up the upper mechanics.
- Remove both compression springs (4) and pay attention for the washers.

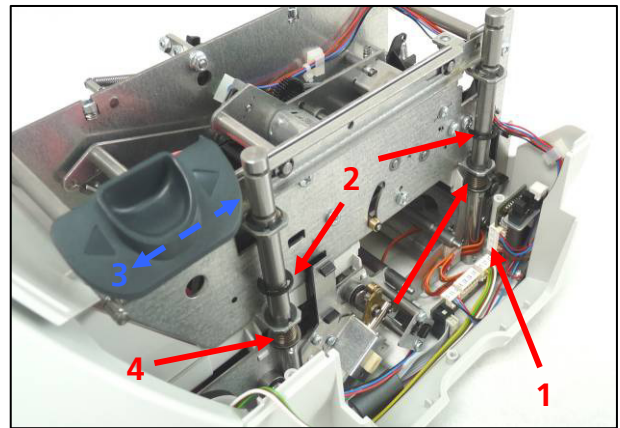


Figure 18: Disassembling - Upper Mechanics

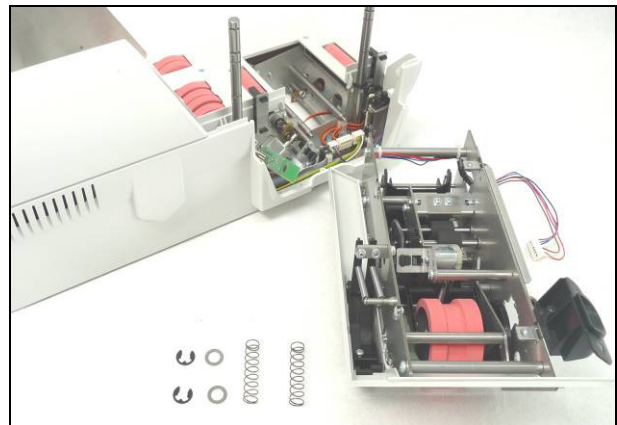


Figure 19: Disassembling - Upper Mechanics

## 8.1. Upper Mechanics

- Demount the plastic cover (1) of the upper mechanics, which is fixed with two screws from the bottom.

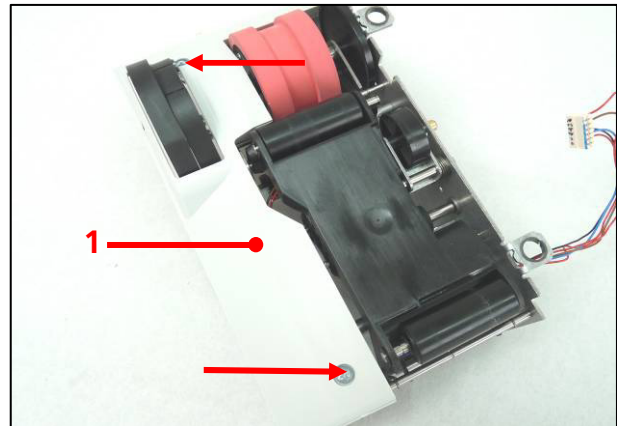


Figure 20: Disassembling - Upper Mechanics

- Unscrew the front plate (1), fixed by three screws (2), and unhook the inside spring (3).

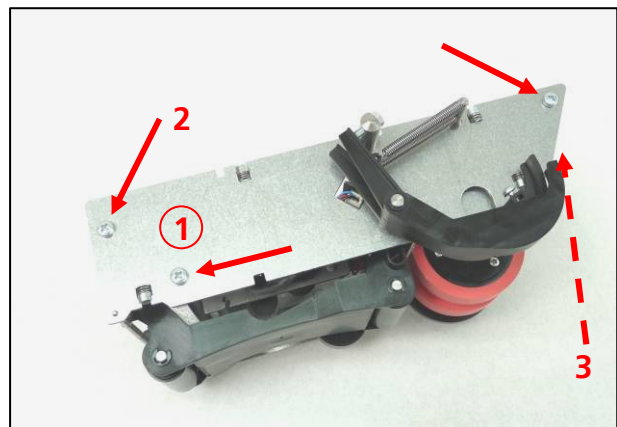


Figure 21: Disassembling - Upper Mechanics

- The mechanics of the separation unit (1) and transport roller unit (2) is not fixed and can be removed easily.

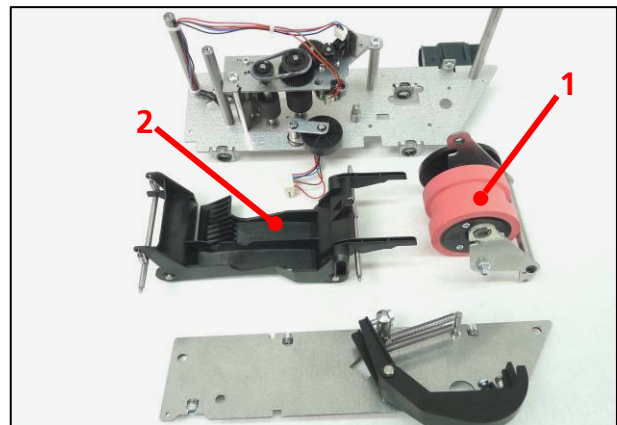


Figure 22: Disassembling - Upper Mechanics

- Disconnect the cable of the motor (1) and the light barrier (2).
- Unscrew three screws (3) of the front plate.

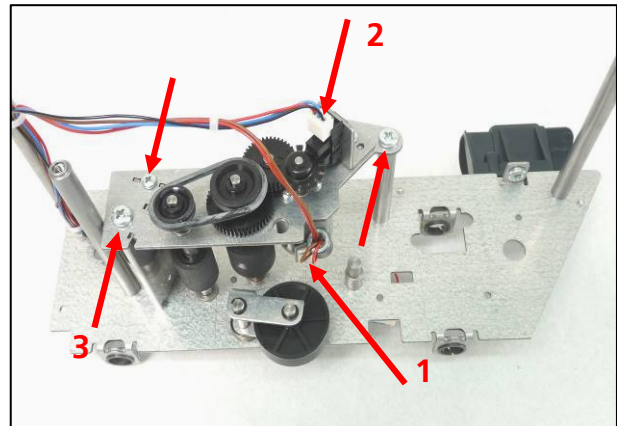


Figure 23: Disassembling - Label Dispenser

- The label dispenser mechanics (1) can now be further disassembled, for example, to replace the intake rollers or the motor.

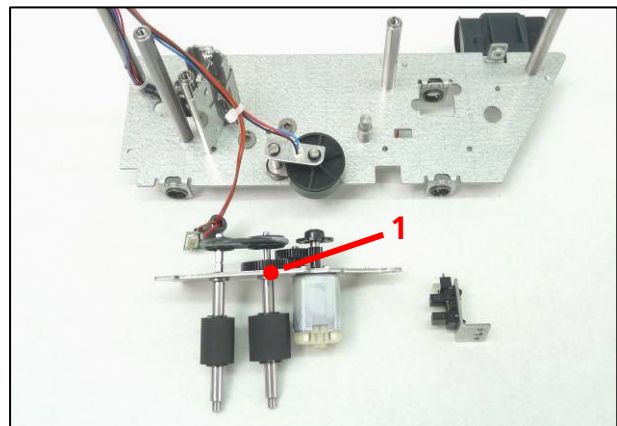


Figure 24: Disassembling - Label Dispenser

### 8.1.1. Disassembling Clutch of Separator Roller

- Demount the side plate (A) by removing the screw (1+2) and the nut (3)

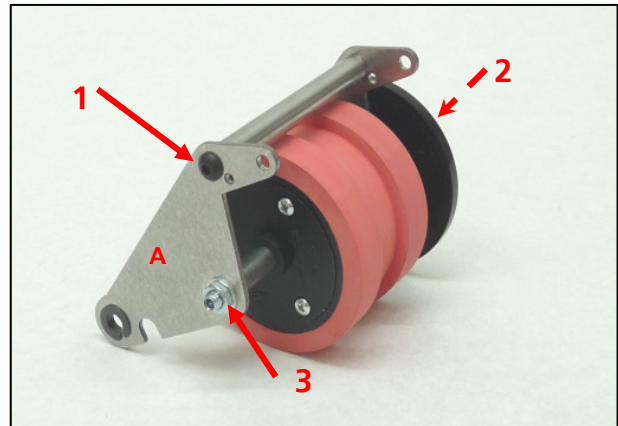
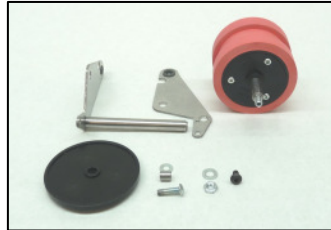


Figure 25: Disassembling – Clutch Separator

- Remove the clip (1) on the back side
- Pay attention for the washer (A)
- Unscrew three screws (2) of the black cover on the front side.
- Take out the clutch unit (3).
- Pay attention for the washer (B) on the inside of the clutch.

**Note:**



The clutch can't get further disassembled. It has to be replaced as complete unit.

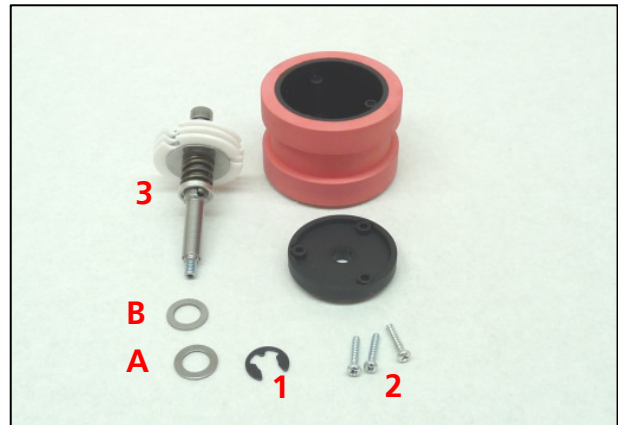


Figure 26: Disassembling – Clutch Separator



For assembly process the inverse way.  
For details refer to the spare part manual.



After each disassembly of the separator roller the correct torque adjustment has to be done. Therefore refer to chapter 9.1 Adjustment separator roller.



## 8.2. Lower mechanics

- To lift out the mechanics, all screws, fixed from the bottom, have to be removed.

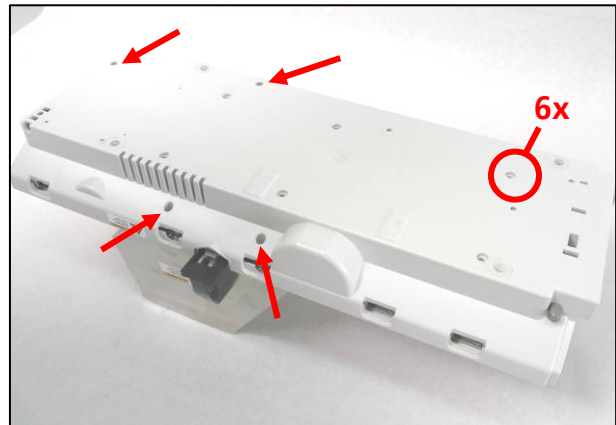


Figure 27: Disassembling - Lower Mechanics

- Before lifting out the mechanics disconnect the following cables
  - Ground
  - grey flat cable
  - no. 4
  - no. 18
  - no 5
- Remove the letter table by removing three screws (1).

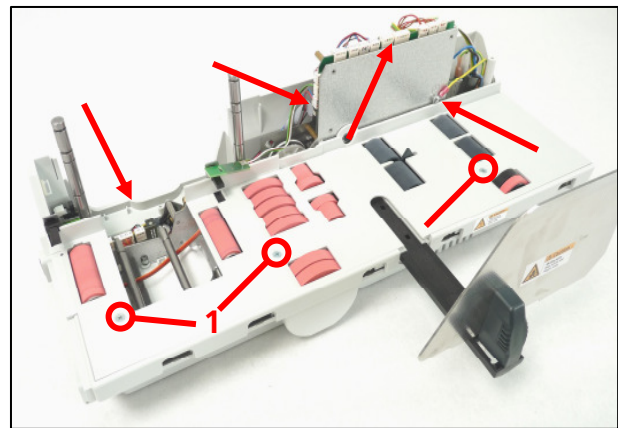


Figure 28: Disassembling – Lower Mechanics

- Remove both light-barriers (1).
- Pull out the side stop (2).
- Finally lift up the table.

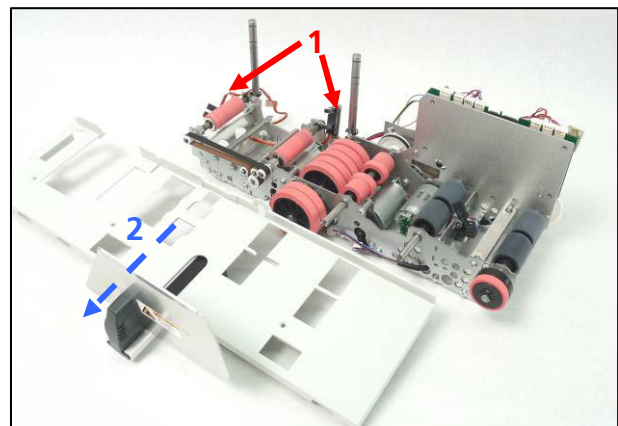


Figure 29: Disassembling - Lower Mechanics



### 8.3. Removing the Main Board

- Disconnect all connectors from the main PCB.



Follow the ESD Protection rule.

- Remove the 4 distance screws (1) and remove the main PCB.
- Remove the cover plate (2).

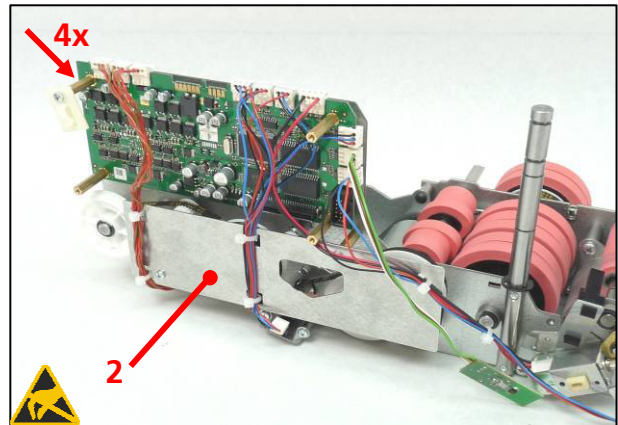
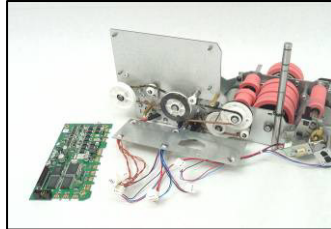


Figure 30: Disassembling - Main PCB

### 8.4. Exchange of the grey intake rollers

- Loose the belt spanners on the backside.
- Take off the corresponding belt from the pinion on the backside.

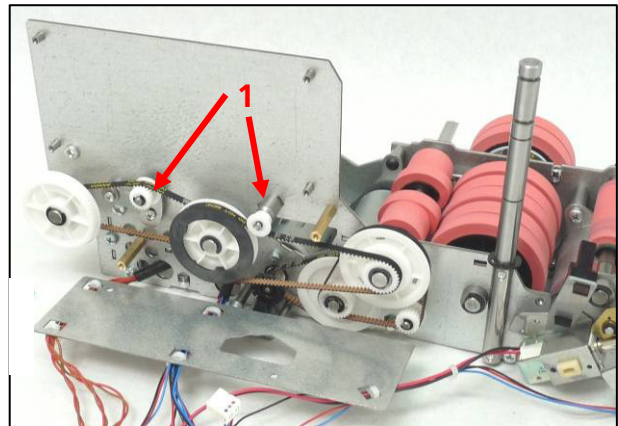


Figure 31: Disassembling – Gray Intake Rollers

- Remove all clips from the corresponding shaft.
- Pull out the shaft backwards.
- Exchange the grey roller.

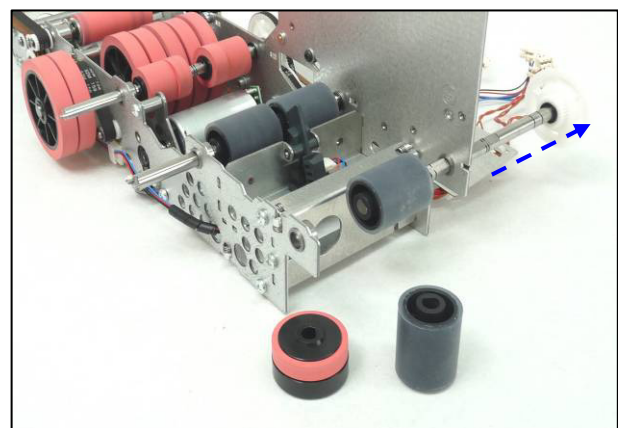


Figure 32: Disassembling - Gray Intake Rollers

## 8.5. Exchange of the red intake rollers

- There are two different types of intake roller:  
3x 249-xx-xxx  
2x 249-xx-xxx (smaller in diameter)
- Take off the clip on the backside (1).
- The axle will be moved in direction to the front side without disassembling of the tooth-belt and front wheel (2).

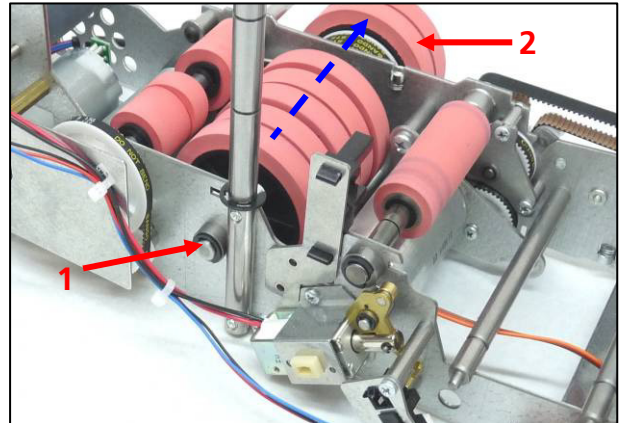


Figure 33: Disassembling - Red Intake Rollers

- For the removing of the intake rollers, all clips in between of the rollers need to be taken off, one after the other.
- Also pay attention for the washers. 2pcs, only located left and right side of the smaller roller (X) (249.xx.xxx)!

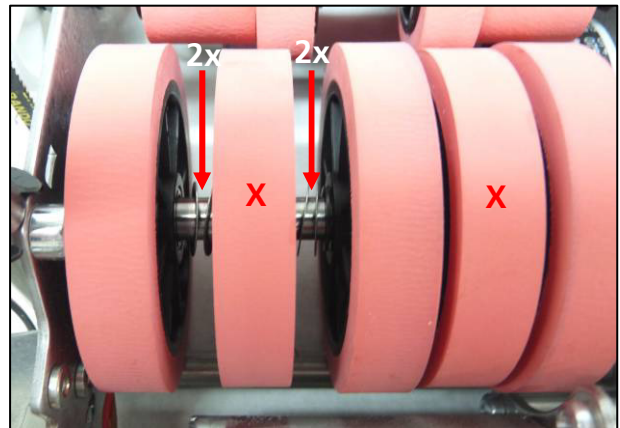


Figure 34: Disassembling - Red Intake Rollers

### Note:



For the correct sequence of all washers and clips by assembly, refer to the spare parts catalogue.



For the assembling, make sure that the intake rollers are mounted in the right sense of orientation. They contain a "one way bearing".

For assembly process the inverse way of the above disassembly description!

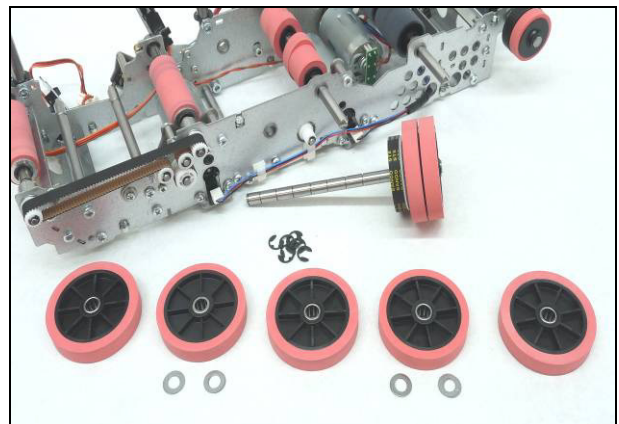


Figure 35: Disassembling - Red Intake Rollers

## 8.6. Exchange of the transport rollers

- Loose the belt spanner (1).
- Lift off the belt from the pinion.
- Remove the pinion (2) which is fixed with a clip to remove the transport roller (3).

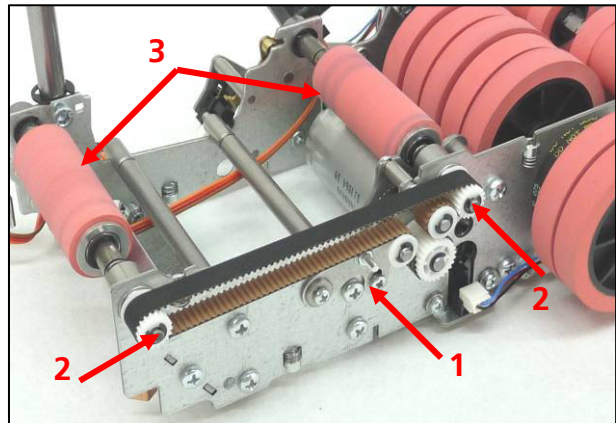


Figure 36: Disassembling - Transport Rollers

- Remove the clips fixed on shaft.
- Pull out the shaft.

For assembly process the inverse way of the above disassembly description!



For the assembling, make sure that the transport rollers are mounted in the right sense of orientation. They contain a "one way bearing".



After assembling, the toothed belt has to be adjusted. Please refer to chapter 6 "Adjustments".

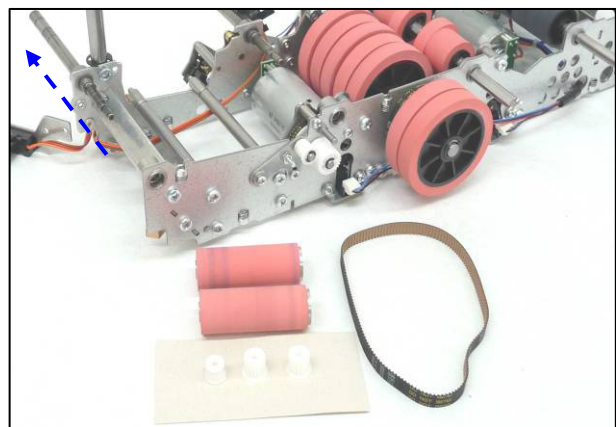


Figure 37: Disassembling - Transport Rollers

## 8.7. Exchange of the motor for the red intake rollers

- Remove both intake rollers.
- Remove the washer (2pcs).
- Remove the toothed belt wheel with the belt.
- With a flat pliers remove the key (see detail).
- Move the entire axle back.

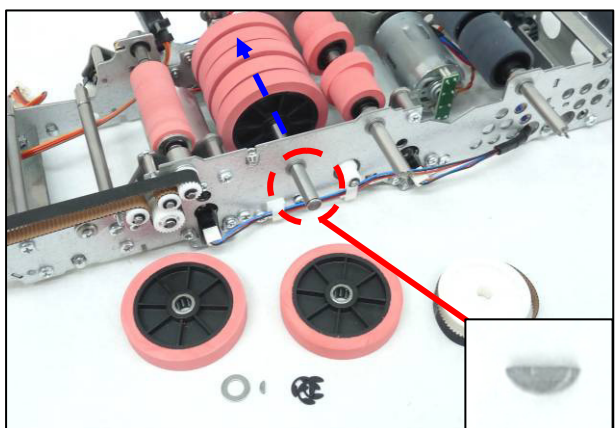



Figure 38: Disassembling - Motor Replacement

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN	<b>TITLE:</b> SERVICE MANUAL <b>SUBJECT:</b> AUTOMATIC FEEDER MATRIX AF / AFS <b>AUTHOR(S):</b> ROLAND BÄRTSCHI (BAER) <b>FILE:</b> PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC	
DOC. REF: DOC. <b>R01.02</b>	CREATED: 31.10.13 16:10 MODIFIED: 19.11.13 13:11	PAGE 27 OF 40



- Remove the light barrier (1).
  - Disconnect the motor from the cable board.
-  Mark the contact with a pen having the correct polarity; helpful by later assembling.
- Unscrew three screws (2) and remove the motor unit.

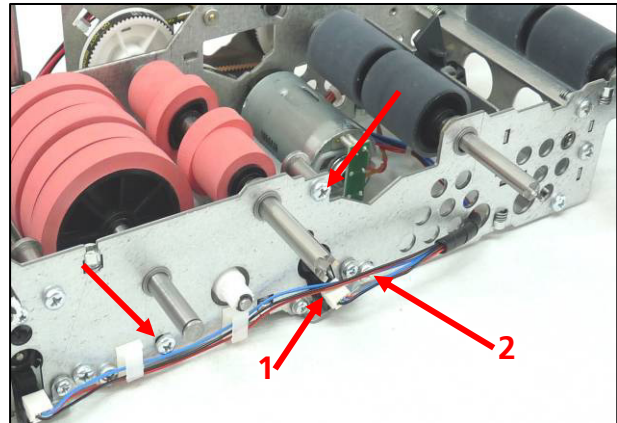



Figure 39: Disassembling - Motor Replacement

- Move the slot disk (1) with a flat screw driver off the motor axle.
- Unscrew the screws and remove the motor.

For assembly process the inverse way of the above disassembly description!

 After assembling, the toothed belt has to be adjusted. Please refer to chapter 6 "Adjustments".

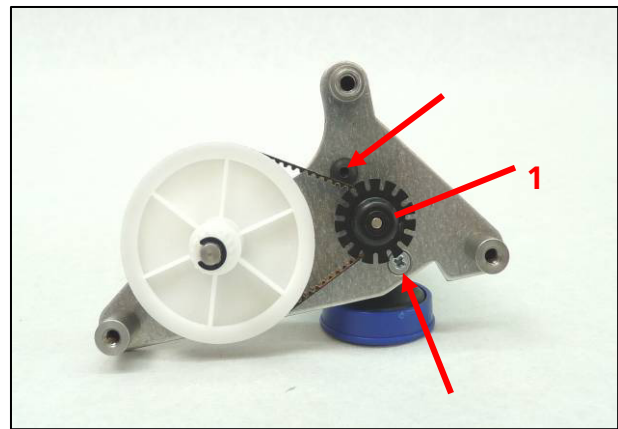



Figure 40: Disassembling - Motor Replacement

## 8.8. Exchange of the motor for the stack rollers

- Disassemble the back plate (1)
  - Remove the light barrier (2).
  - Disconnect the motor from the cable board.
-  Mark the contact with a pen having the correct polarity; helpful by later assembling.
- Unscrew both screws and remove the motor

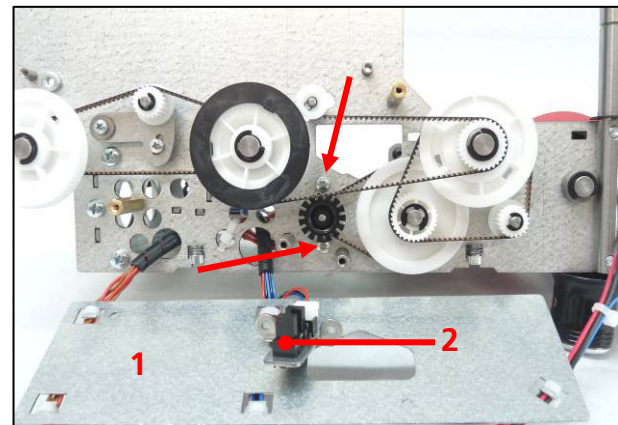


Figure 41: Disassembling - Motor Replacement

For assembly process the inverse way of the above disassembly description!



After assembling, the toothed belt has to be adjusted. Please refer to chapter 6 "Adjustments".

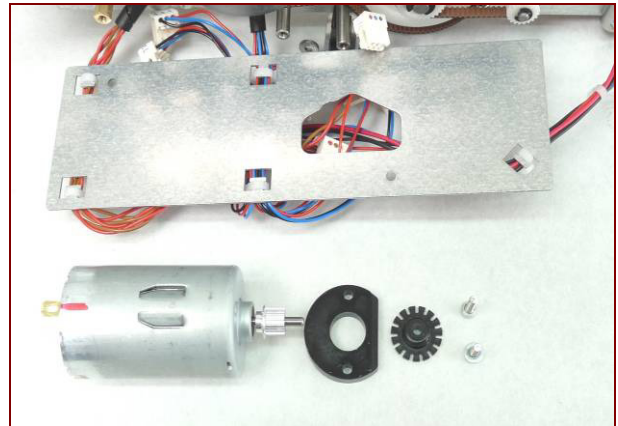


Figure 42: Disassembling - Motor Replacement

## 8.9. Exchange of the motor for the transport rollers

- Remove the light barrier (1).
- Disconnect the motor from the cable board.



Mark the contact with a pen having the correct polarity; helpful by later assembling.

- Unscrew three screws (2) and remove the motor unit.

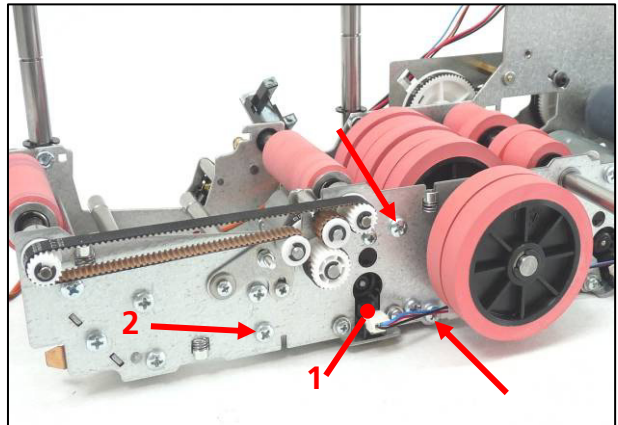


Figure 43: Disassembling - Motor Replacement

For assembly process the inverse way of the above disassembly description!



After assembling, the toothed belt has to be adjusted. Please refer to chapter 6 "Adjustments".

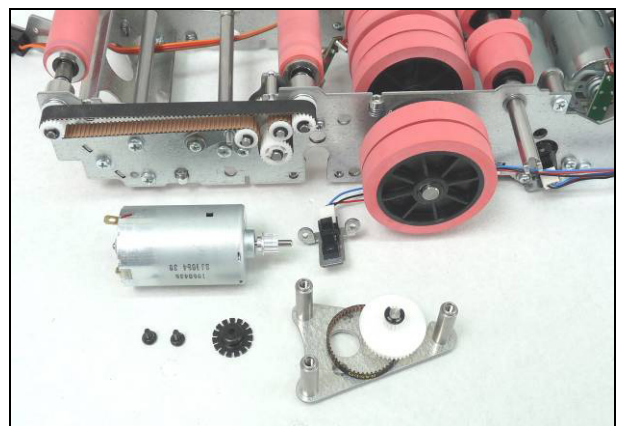


Figure 44: Disassembling - Motor Replacement

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN	<b>TITLE:</b> SERVICE MANUAL <b>SUBJECT:</b> AUTOMATIC FEEDER MATRIX AF / AFS <b>AUTHOR(S):</b> ROLAND BÄRTSCHI (BAER) <b>FILE:</b> PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC	
DOC. REF: DOC. <b>R01.02</b>	CREATED: 31.10.13 16:10 MODIFIED: 19.11.13 13:11	<b>PAGE 29 OF 40</b>

## 9. Assembling Feeder Matrix AF / AFS

This section describes the assembling of the Feeder Matrix AF and AFS. The section contains no detailed description for the assembling of the intake rollers, transport rollers or of the motors. In case of an assembling follow the disassembling procedure the inverse way.

### 9.1. Lower mechanics

If previous disassembled mount first:



**Note:**

Instructions to belts adjustment see chapter 6 "Adjustments"

- The transport rollers (1).
- The intake rollers (red) (2).
- The eccentric roller (3) (red) and the stack rollers (gray) (4).
- Before mounting the back plate (5), the belt adjustment must be done.
- The main PCB (6) and connect all connectors.
  
- Put the letter table back in its position and fix it with the corresponding screws (1)
- Mount the two light barriers (2).
  
- Put the mechanics back into the bottom housing.
- Connect all other cables to the main PCB.
  - Ground
  - grey flat cable
  - no. 4
  - no. 18
  - no 5

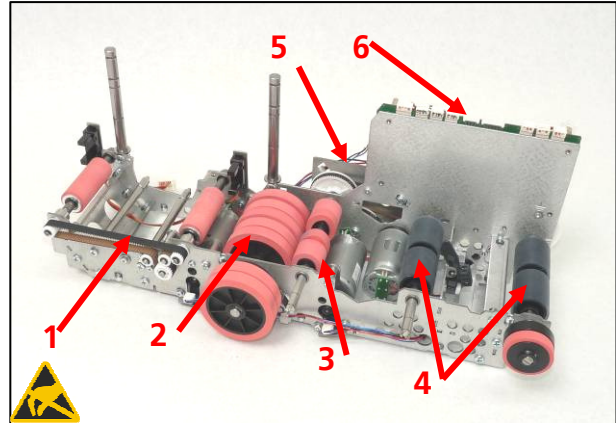


Figure 45: Assembling - Lower Mechanics

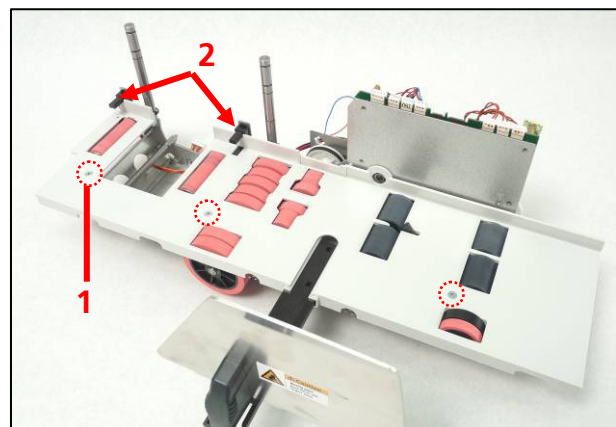


Figure 46: Assembling - Lower Mechanics

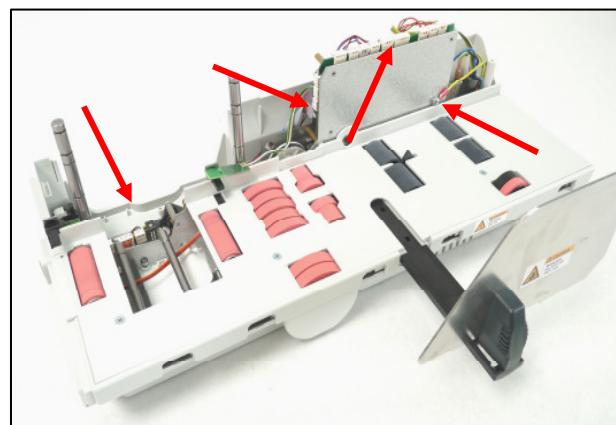


Figure 47: Assembling - Lower Mechanics

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN	TITLE: SUBJECT: AUTHOR(S): FILE:	<b>SERVICE MANUAL</b> <b>AUTOMATIC FEEDER MATRIX AF / AFS</b> ROLAND BÄRTSCHI (BAER) PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC	CREATED: 31.10.13 16:10 MODIFIED: 19.11.13 13:11	PAGE 30 OF 40
DOC. REF: DOC. R01.02				

- Mount the top housing (1).
- From the bottom side, screw up the mechanics with the bottom housing.
- Put both washer and compression springs on the rods (2).

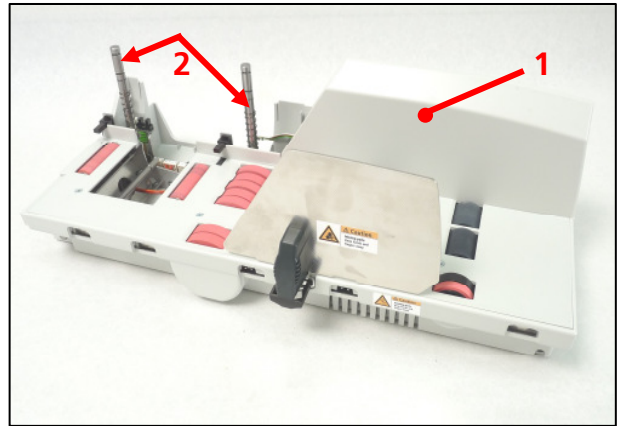


Figure 48: Assembling - Label Dispenser

## 9.2. Upper mechanics

- Mount the label dispenser mechanics and screw it up with three screws (1).
- Connect the light barrier cable (2).
- Connect the motor's connector board (3).

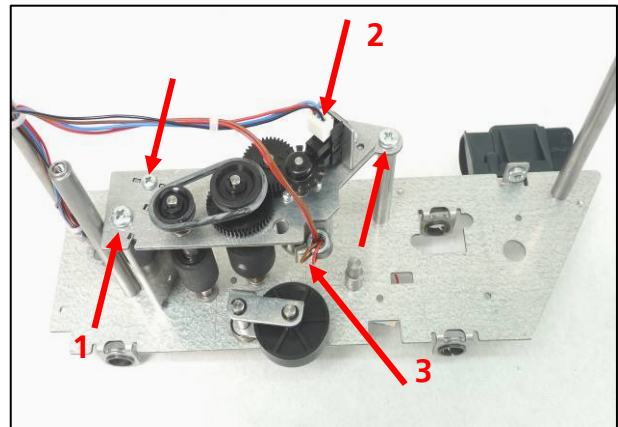


Figure 49: Assembling - Label Dispenser

- Assemble the separation roller together with the transport roller unit into the mechanics.

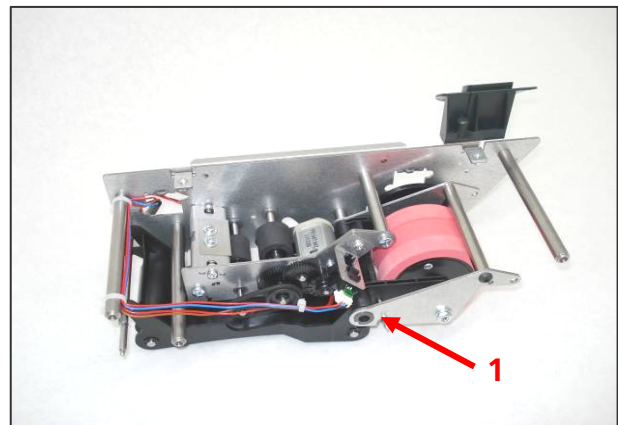


Figure 50: Assembling - Upper Mechanics

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN	TITLE: <b>SERVICE MANUAL</b> SUBJECT: <b>AUTOMATIC FEEDER MATRIX AF / AFS</b> AUTHOR(S): <b>ROLAND BÄRTSCHI (BAER)</b> FILE: <b>PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC</b>		
DOC. REF: DOC. <b>R01.02</b>	CREATED: <b>31.10.13 16:10</b> MODIFIED: <b>19.11.13 13:11</b>	PAGE <b>31</b> OF <b>40</b>	



- Mount the front plate (1) on the mechanics.
- Fix it with the corresponding screws (2) and hook in the spring (3).

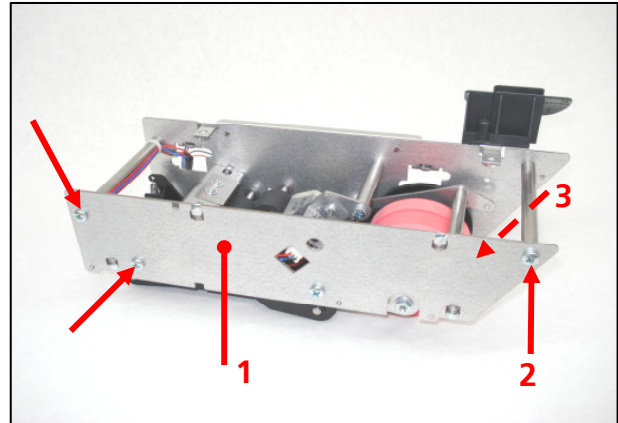


Figure 51: Assembling - Upper Mechanics

- Mount the plastic cover (1).

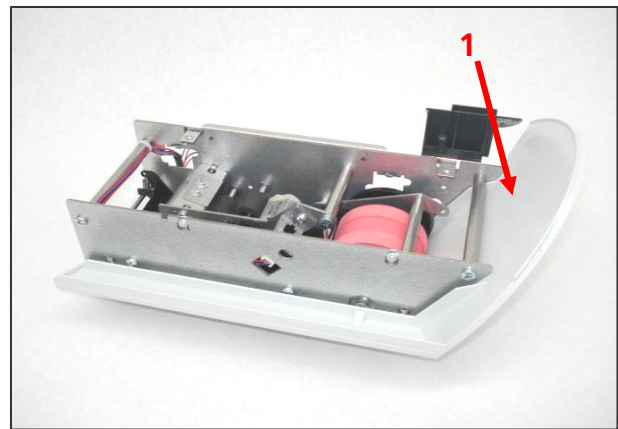


Figure 52: Assembling - Upper Mechanics

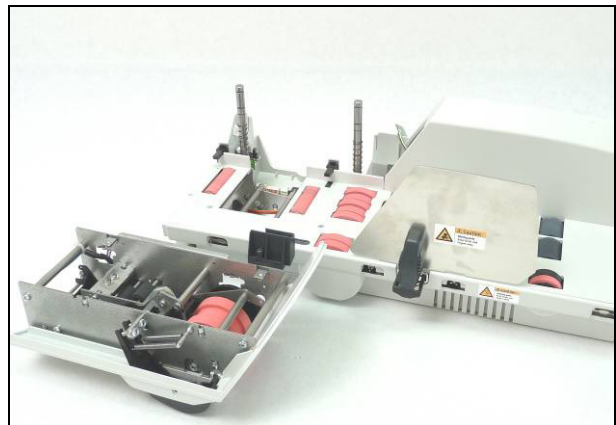


Figure 53: Assembling – Upper & Lower Mechanics



### 9.3. Assembling upper & lower mechanics

Make sure the washer and compression springs have been put already onto the rods.

- Mount the upper mechanics (1) onto the rods.
- Move the upper mechanics in its low position and lock it with the lever (2).
- Mount two clips (3) on the poles.
- Connect cable no 18 (4). Guide the cable correctly in its clip (5).

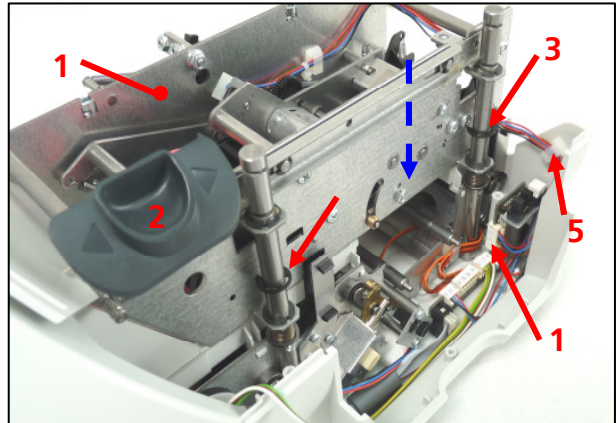


Figure 54: Assembling - Upper & Lower Mechanics

- Snap the Hall Effect Sensor into the cover (1).
- Mount the cover (1) and fix it with three screws (2).
- Mount the seal unit

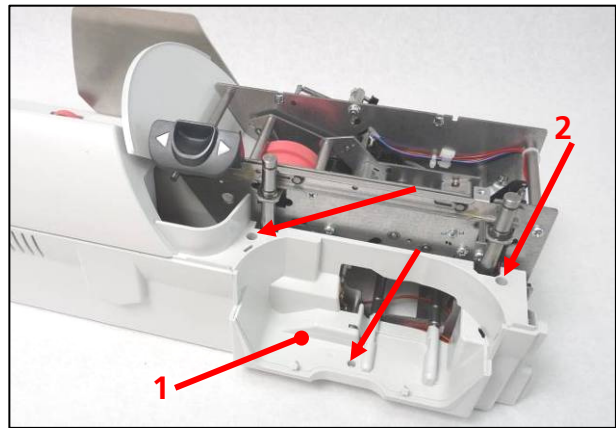


Figure 55: Assembling – Upper & Lower Mechanics

- Mount the top cover and fix it with the corresponding four screws.

**Note:**

After finishing the assembly, it is recommended to process some function test. Therefore power up the feeder with the Matrix F6/F8 and enter into the service menu "Tests"



- Perform feeder function tests.



Figure 56: Assembling - Top Cover

## 10. Adjustments

### 10.1. Separation roller

- Move the mechanics in upper position.
- Wrap the rope of the spring balance around the separation roller and fix it with a tape as shown in the illustration below.
- Attach the spring balance together with the support tool (1) to the upper mechanics as shown on the illustration.
- Wind up the rope until the spring balance indicates approx. 1000g.

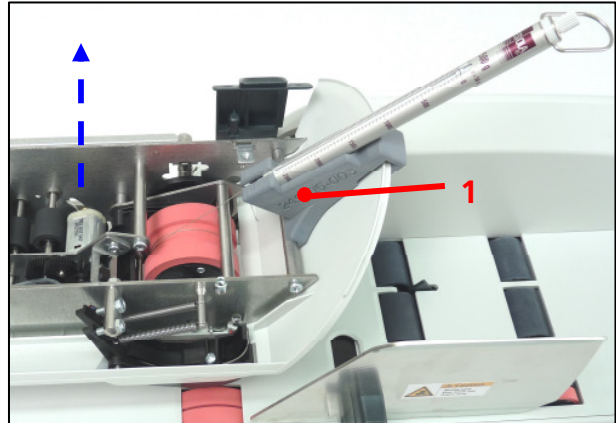


Figure 57: Adjustments - Separation Roller

- Let the separation roller stay untouched for approx. 30 sec.
- After these 30 sec. the spring balance should indicate a value between **500g and 550g**.

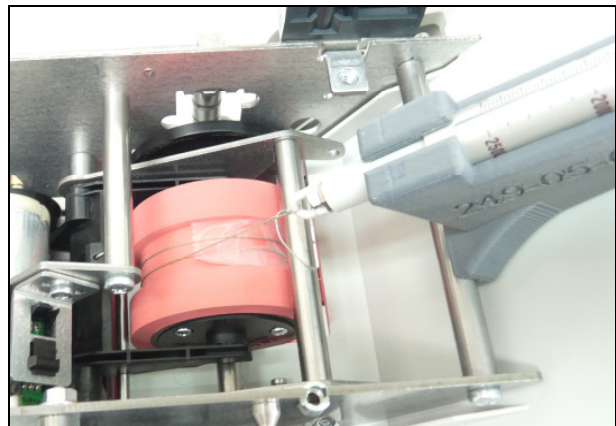


Figure 58: Adjustments - Separation Roller

- If required, adjust the separation roller by loosen the counter-nut and turning the allen head screw. Use a corresponding allen wrench.
- To increase the torque turn clockwise.
- To decrease the torque turn anticlockwise.
- Repeat the measuring procedure till the correct value is adjusted and tighten the counter-nut.

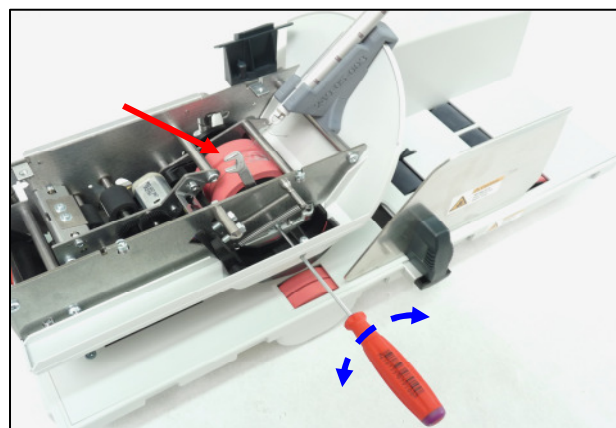


Figure 59: Adjustments - Separation Roller

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN	TITLE: <b>SERVICE MANUAL</b> SUBJECT: <b>AUTOMATIC FEEDER MATRIX AF / AFS</b> AUTHOR(S): <b>ROLAND BÄRTSCHI (BAER)</b> FILE: <b>PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC</b>	
DOC. REF: DOC. <b>R01.02</b>	CREATED: <b>31.10.13 16:10</b> MODIFIED: <b>19.11.13 13:11</b>	<b>PAGE 34 OF 40</b>

## 10.2. Belts

In this chapter the description for belt adjustment is given. If there is one or the other belt not to find, that means; these belts need to be adjusted manually, by the experience of the engineer. The engineers shall prevent to adjust the belts to thigh; this may slow down the motor to much, what may cause malfunctions.

### 10.2.1. Belt – Transport Rollers

- Loose the belt spanner (1) by two screws and one 5.5mm nut.
- Hook in the spring balance (2) as shown.
- Pull the balance spring as shown, in alight angle to the requested value.
- Adjust the belt with a value of **600g**.
- Screw down the belt spanner.

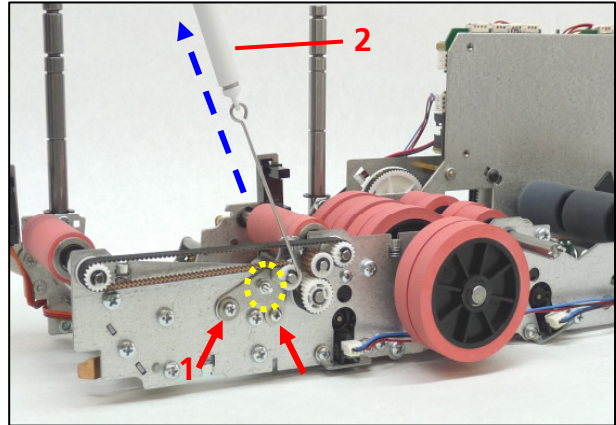


Figure 60: Adjustments - Belt

### 10.2.2. Belt - Stack Rollers

- Disconnect all connectors from the main board.
- Remove the back plate (1).
- Loose the belt spanner (2) by two screws.
- Hook in the spring balance (3) as shown.
- Pull the balance spring upright and adjust the belt spanner with a value of **200g**.
- Screw down the belt spanner.

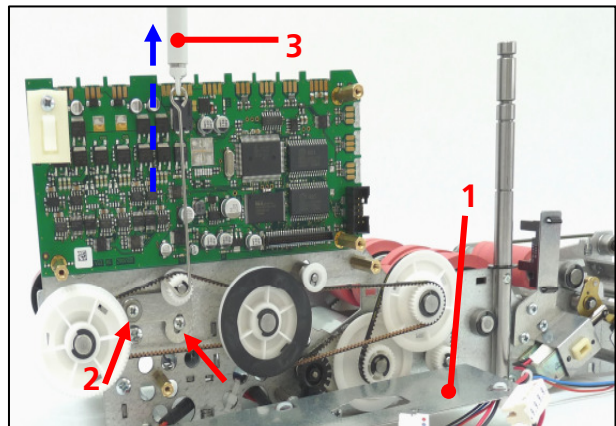


Figure 61: Adjustments - Belt

### 10.2.3. Belt - Motor transmission

Receiving the correct tension for tooled belts, most motor positions in Matrix Systems are adjustable. The process, explained in this chapter, is valid for all transmissions motor pinion - cogwheel.

- Loose both screws (1).
- Move the motor in its position to receive the correct belt tension.
- Tighten the motor.

**Note:**



There is no recommended value for this adjustment. Make sure that the transmission turns without high resistance.

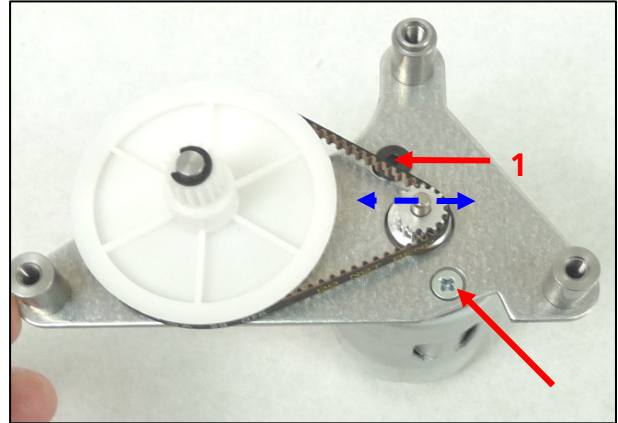


Figure 62: Adjustments - Belt

### 10.2.4. Belt – Manual Control for correct belt tension

Test for free movement of the drive



Test, by turning of all rollers by hand, its free rotation. There should not be a feeling of high resistance or rough running.

In case of rough running the belt tension of the corresponding transmission may be too tight.

→ Lower the belt tension.

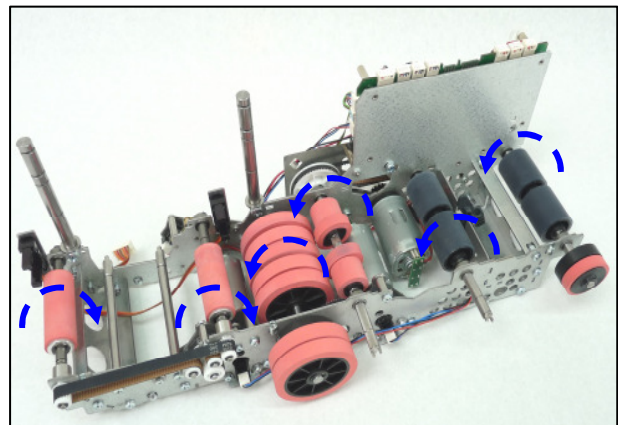


Figure 63: Adjustments - Belt



### 10.3. Adjustment of Separator Levers

Basically the separator levers are pre-adjusted through Frama AG. The space between separator shoes and roller or letter table needs only to be controlled and / or re-adjusted in case of badly separated envelopes.

Default setting:

**Lever 1:** Measure to rubber roller = **0,5mm**

**Lever 2:** Measure to letter table = **1.5mm**

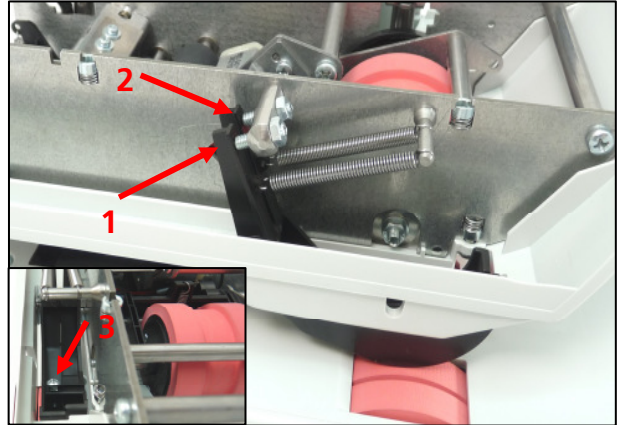


Figure 64: Adjustments – Separator Lever

Process as followed for adjustment:

First turn out the cross head screw (3) to allow the settings.

1. Adjust the lever **1** correctly.
2. Adjust lever **2** correctly.
3. Adjust lever retarded motion

For this loosen the counter nut (A) and afterwards turn the worm screw (B) in or out.

Tighten the screws.

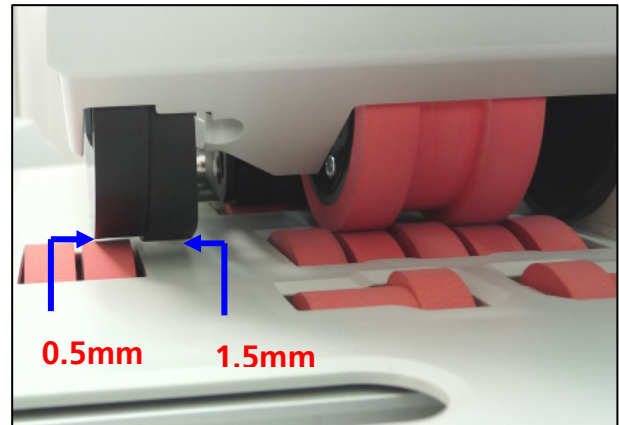


Figure 65: Adjustments – Separator Lever

Control the measure with a thickness gauge as showed in the picture (pos.1 and pos.2).

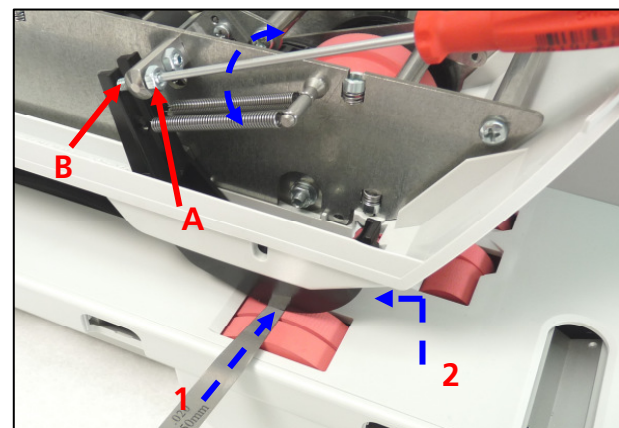


Figure 66: Adjustments – Separator Lever

### 10.3.1. Adjustment of lever retarded motion

The cross head screw (A) needs to be adjusted that way that the lever 2 gets lifted by lever 1 with a little delay.

Process as followed for adjustment:

- Turn out the cross head screw (A)
- Put the thickness gauge of **0.2mm** as showed in the picture between lever 1 and worm screw.
- Turn the cross head screw (A) in, till the screw is touching the lever 1.

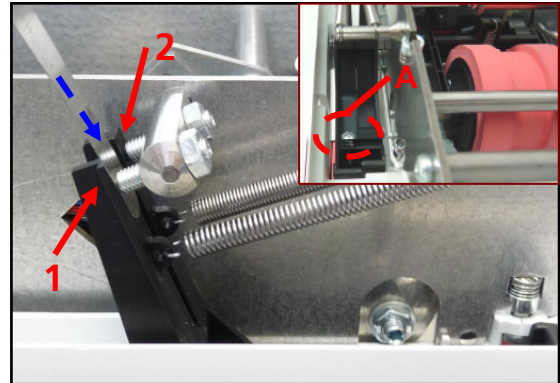


Figure 67: Adjustments - Belt

### 10.3.2. Tool list

Spring balance 600g	1004708
Spring balance with rope	1016990
Support	1015847
Setting gauge for lever	1019410
Thickness gauge 0.2, 0.5mm and 1.5mm	Not available at Frama AG

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN	TITLE: <b>SERVICE MANUAL</b> SUBJECT: <b>AUTOMATIC FEEDER MATRIX AF / AFS</b> AUTHOR(S): <b>ROLAND BÄRTSCHI (BAER)</b> FILE: <b>PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC</b>	
DOC. REF: DOC. <b>R01.02</b>	CREATED: <b>31.10.13 16:10</b> MODIFIED: <b>19.11.13 13:11</b>	<b>PAGE 38 OF 40</b>

## 11. Maintenance Instruction

The following section provides general information for correct maintenance of the Feeder Matrix AF /AFS.

### 11.1. General measures

- Clean the outside of the Feeder with a soft cloth. **Do not use harsh chemical cleaners!**
- Clean the inside of the Feeder. Remove dust and possible paper particles.
- Check sensors and remove paper dust if required.
- Check the torque of the separation roller and belt tensions according to chapter 6.
- Clean the sealer unit from paper residues and lime and replace the fissile wedge if required.
- Replace worn out parts such as intake rollers, etc. if required.

### 11.2. Cleaning of the Rubber Rollers

For the Feeder Matrix AF / AFS rubber rollers, use regular rubber roller cleaning agent as used for printer and PC or other office machines.



Thinner and other unsuitable cleaning solvents may destroy the rubber rollers and plastic parts. Thus the functionality of the Feeder Matrix AF / AFS is not longer guaranteed.

- Frama AG recommends the cleaning agent from TYP AG.  
Rubber rollers special cleaner: 6-1508/W1/H/ soft

Web address: [www.typ-gummi-tgw.ch](http://www.typ-gummi-tgw.ch)

### 11.3. Lubrication chart

With the launch of Matrix R2, especially because of the higher performance of Matrix F82, Frama AG decided to analyse the lubrication theme completely and define accordingly a lubrication instruction for the after sales service. New, only two lubricants are applied for the entire Matrix Range:

**Grease:** Fluorstatic 70+PTFE (new)

**Oil:** Foodoil SH-15 (as before)



**For correct lubrication of the Matrix Range refer to the manual “Lubrication Instruction”, distributed with the technical circular T 3.5**

<b>FRAMA AG</b> CH-3438 LAUPERSWIL / BERN	TITLE: <b>SERVICE MANUAL</b> SUBJECT: <b>AUTOMATIC FEEDER MATRIX AF / AFS</b> AUTHOR(S): <b>ROLAND BÄRTSCHI (BAER)</b> FILE: <b>PER_MAN_R0102_EN_SERVICE_MANUAL_AF_AFS.DOC</b>	
DOC. REF: DOC. <b>R01.02</b>	CREATED: <b>31.10.13 16:10</b> MODIFIED: <b>19.11.13 13:11</b>	<b>PAGE 39 OF 40</b>

## 11.4. General information about the lubrication method

<b>Fluorstatic 70+PTFE</b> <ul style="list-style-type: none"> <li>• Soft fluid grease</li> <li>• Micro Teflon particles</li> <li>• Non-ageing</li> <li>• Small amount needed in application</li> <li>• High performance grease, with reasonable price</li> </ul>	<b>Excellent for:</b> <ul style="list-style-type: none"> <li>• Spindle</li> <li>• Spindle nut</li> <li>• Linear guides</li> <li>• Plain roller</li> </ul>
<b>Foodoil SH15</b> <ul style="list-style-type: none"> <li>• Oil for universal application</li> <li>• Excellent compatibility to plastic</li> </ul>	<b>Excellent for:</b> <ul style="list-style-type: none"> <li>• Good re-lubrication for all kind off bearings</li> </ul>

## 11.5. Lubrication for after sales service

The new lubrication method is basically designed for the Matrix franking machine's life time cycle. A re-lubrication should only be executed in case of a disassembling and / or a repair with exchanging of parts.

The new lubrication method has to be applied for Matrix R1 (BOL / MOL) and Matrix R2 (BOL2/ MTOL2) and feeder AF/ AFS as well in the same way after disassembly – assembly of sections and / or single parts.

- Refer to the Manual "Lubrication Instruction"

## 11.6. Bearing and lever joints

For the case of necessary re-lubrication of bearings and lever joints, follow the instruction given in the chapter 3 "Factory lubrication" of the manual "Lubrication Instruction"



## 12. Notes – Matrix Feeder AF / AFS

[illegible]